

### **Abstract**

The present invention is directed to a catalyst and a process for autothermal catalytic steam reforming of hydrocarbons using the catalyst. The catalyst has a multilayer structure and contains a lower catalyst layer lying directly on a support and an upper catalyst layer lying on the lower catalyst layer, in which the lower catalyst layer preferentially catalyzes partial oxidation and the upper catalyst layer preferentially catalyzes steam reforming. Each catalyst layer contains at least one platinum group metal on an oxide support material. The process is operated adiabatically by passing a starting mixture of the hydrocarbons, oxygen and water or steam, heated to a preheat temperature, over the multilayer catalyst. The catalyst and process are used to generate hydrogen-containing fuel gases for fuel cells in reformer systems.